

Project		Catalog #		Type	
Prepared by		Notes		Date	



HALO

ML Flex Series - Canless LED Downlighting 2-inch Round & Square Downlights

The ML Flex Series is a set of striking, high-performance fixtures available in four sizes (1, 2, 3, and 4-inch). ML Flex Canless luminaires share light engines between the two larger and two smaller aperture sizes making trim changes between size, shape (round or square), and downlight or wall wash effortless.

The ML Flex 2-inch fixtures are offered with an array of flanged downlight trims in smooth or baffle and round or square. Control beam angles with interchangeable 25°, 40°, and 55° optics. Customize lighting with selectable lumens and colors with flicker-free dimming to less than 5% in phase cut (120V) or 0-10V (120-277V) versions. For a beautiful, quiet ceiling, install ML Flex 2-inch fixtures with a flushmount mud-in ring.

Typical Applications Residential, Hospitality, Healthcare, Retail

Interactive Menu

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Can be used to comply with California Title 24 High Efficiency requirements.¹
Certified to California Appliance Efficiency Database under JAG.



Top Product Features

- 2" Canless LED Downlights mount directly to the ceiling (no housing required)
- Use with canless mounting frames for new construction installations
- **Trims:** Flanged downlight or wall wash trims in smooth or baffle and round or square
- **Field-interchangeable TIR optics:** 25°, 40°, and 55° (ships with 40° TIR optic)
- **Color SeleCCTable™:**
 - 5-color Field-SeleCCTable™ (2700/3000/3500/4000/5000K); 90+ CRI
 - Field-SeleCCTable™ Dim-to-Warm: 3000K-to-1800K or 2700K-to-1800K; 90+ CRI
- **Lumen Select:** Low/Medium/High = 200/400/550 lm (nominal)
- **Dimming Versions:** Dims to less than 5% in either phase cut LE/TE (120V) with compatible dimmers OR 0-10V (UNV 120-277V)
- AIR-TITE, Wet location-listed, IC-rated
- 50,000 hrs of maintenance-free operation
- 5-year warranty

Order Information

Stock: 2" ML Flex Downlights

Stock ML Flex fixtures come fully assembled and include the LED light engine, 40° TIR optic, removable clear lens, remote driver / junction box, and interchangeable trim.

Optional new construction mounting frames, flushmount mud-in rings (coming soon), interchangeable TIR optics, and driver-to-light engine extension cables are also available.

Phase Cut LE/TE Dimming, 120V Input

Catalog Number	Description	Lumens (nominal)	CRI / CCT	Dimming / Driver	Trim Finish	TIR Optic
ML2LSFS1ERMW	2" Round Smooth LED Canless Downlight	Lumen Selectable 200/400/550 lm	90+ CRI, 5-color Field-SeleCCTable™ CCT: 2700/3000/3500/4000/5000K	≤5% Phase Cut LE/TE Dimming, 120V 60Hz	Matte White	40°
ML2LSFS1ESMW	2" Square Smooth LED Canless Downlight	Lumen Selectable 200/400/550 lm	90+ CRI, 5-color Field-SeleCCTable™ CCT: 2700/3000/3500/4000/5000K	≤5% Phase Cut LE/TE Dimming, 120V 60Hz	Matte White	40°
ML2LSD2W1ERMB	2" Round Smooth LED Canless Downlight	400 lm	90+ CRI, Field-SeleCCTable™ Dim-to-Warm 3000-to-1800K or 2700-1800K	≤5% Phase Cut LE/TE Dimming, 120V 60Hz	Matte Black ⁽²⁾	40°
ML2LSD2W1ERMW	2" Round Smooth LED Canless Downlight	400 lm	90+ CRI, Field-SeleCCTable™ Dim-to-Warm 3000-to-1800K or 2700-1800K	≤5% Phase Cut LE/TE Dimming, 120V 60Hz	Matte White	40°

0–10V, Universal Voltage 120–277V (Commercial)

Catalog Number	Description	Lumens (nominal)	CRI / CCT	Dimming / Driver	Trim Finish	TIR Optic
ML2LSFSE010RMW	2" Round Smooth LED Canless Downlight	Lumen Selectable 200/400/550 lm	90+ CRI, 5-color Field-SeleCCTable™ CCT: 2700/3000/3500/4000/5000K	≤5% 0–10V Dimming, UNV 120–277V 50Hz/60Hz	Matte White	40°

Made to Order: 2" ML Flex Fixtures

Made to order ML Flex fixtures include the LED light engine, 40° TIR optic, removable clear lens, remote driver / junction box, and interchangeable trim.

Optional new construction mounting frames, flushmount mud-in rings (coming soon), interchangeable TIR optics, lenses, and driver-to-light engine extension cables are also available.

Module	Lumens (nominal) ⁽¹⁾	CRI/CCT	Driver	Shape	Trim Type	Trim Finish
ML2 = 2" LED Light Engine	LS = Lumen Selectable 200/400/550 lm	FS = 90+ CRI, 5-color Field-SeleCCTable™ CCT: 2700/3000/3500/4000/5000K D2W = 90+ CRI, Field-SeleCCTable™ Dim-to-Warm 3000-to-1800K or 2700-1800K ⁽¹⁾	1E = ≤5% Phase Cut LE/TE Dimming, 120V 60Hz E010 = ≤5% 0–10V Dimming, UNV 120–277V 50Hz/60Hz ⁽³⁾	R = Round S = Square	Blank = Downlight	MW = Paintable Matte White SL = Silver MB = Matte Black MWB = Paintable Matte White Baffle SLB = Silver Baffle MBB = Matte Black Baffle
Notes	Notes	Notes	Notes	Notes	Notes	Notes
	1. D2W versions are 400 lumens (not lumen selectable)	1. D2W versions are 400 lumens (not lumen selectable)	3. D2W version is not available with the 0-10V driver.			

Optional Accessories

Catalog Number	Description
Optics	
TIR1D25NFL	25° narrow flood optic (fits 1" & 2" ML Flex fixtures)
TIR1D40FL	40° flood optic (fits 1" & 2" ML Flex fixtures)
TIR1D55WFL	55° wide flood optic (fits 1" & 2" ML Flex fixtures)

Extension Cables

Fixture-to-Junction Box Extension Cable (order separately)

Use HALO Canless Extension Cables in applications where junction boxes need to be installed further away from the fixture – either for convenience or to save on line-voltage wire. (Co-locating junction boxes makes adjustments and maintenance fast and easy.)

HLB06FSEC	6 ft. extension cable
HLB12FSEC	12 ft. extension cable
HLB20FSEC	20 ft. extension cable

Catalog Number	Description
Mud Rings for Downlights	
These installation plaster-frame accessories allow the fixture's flange to recess flush with the ceiling surface for a clean ceiling.	
2MFMR	2" Round Flushmount Mud Ring (coming soon)
2MFMS	2" Square Flushmount Mud Ring (coming soon)

ML Flex New Construction Mounting Frames

Designed to ensure the proper placement and alignment of canless LED downlights in new construction projects. It features adjustable hanger bars, and pre-installed nails for easy installation and compliance with local code requirements.

MFML2R	2" Round ML Flex New Construction Mounting Frame (Use with 2" Downlights Only)
MFML2S	2" Square ML Flex New Construction Mounting Frame (Use with 2" Downlights Only)

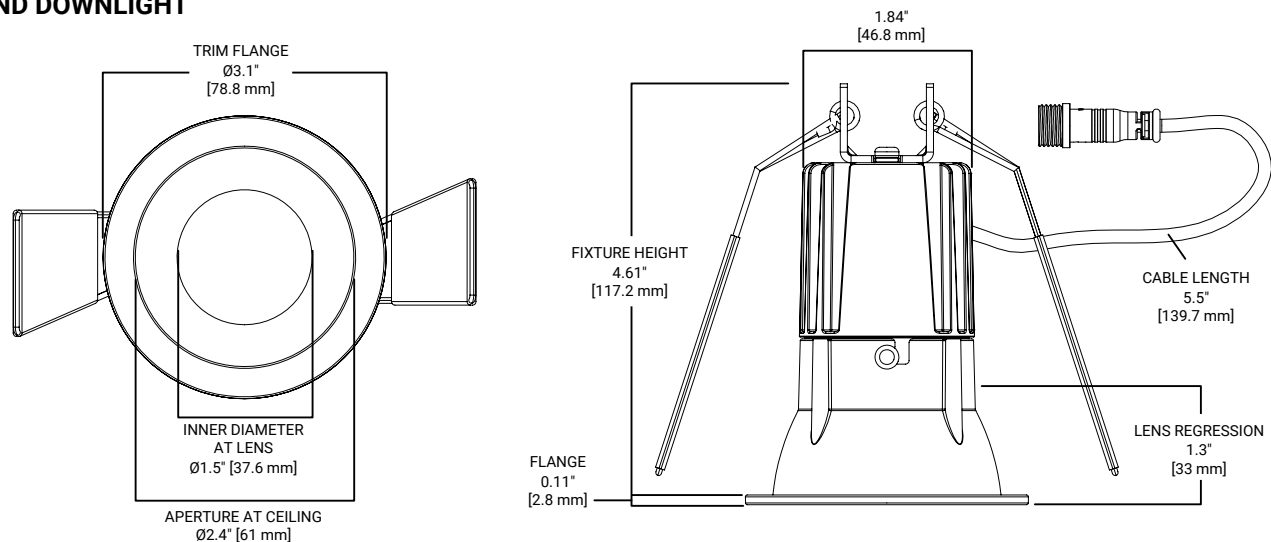


Dimensional and Mounting Details

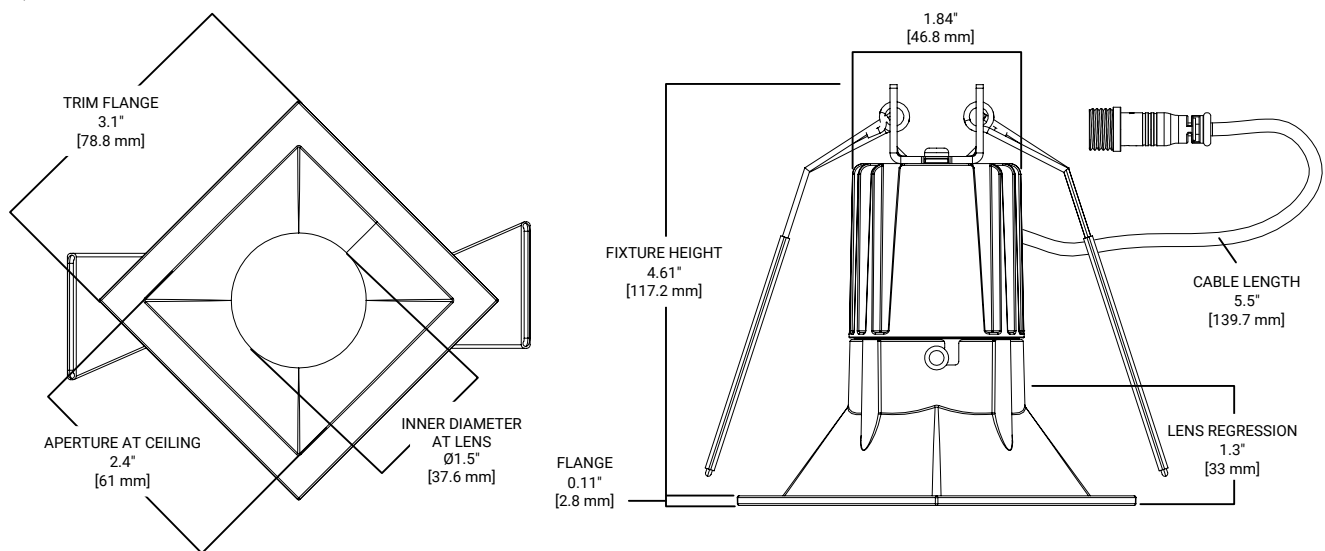
Cut Out (Templates included in instructions and packaging)

- 2" Round Fixture = 2-5/8" [66.7mm] circle / hole saw
- 2" Square Fixture = 2-5/8" [66.7mm] square

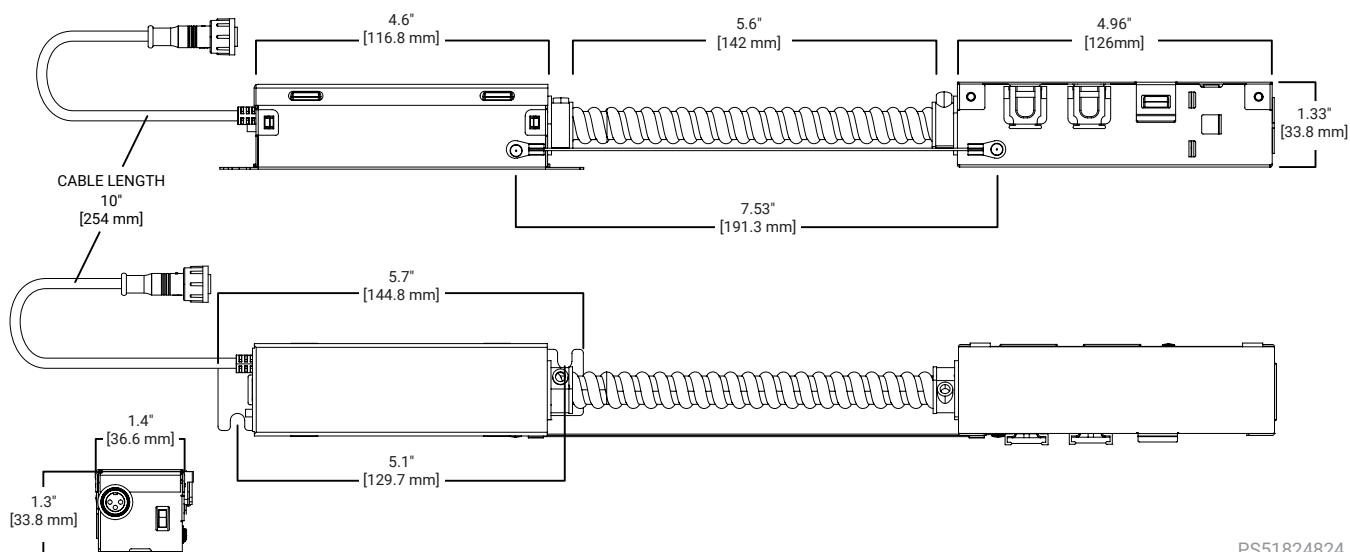
2" ROUND DOWNLIGHT

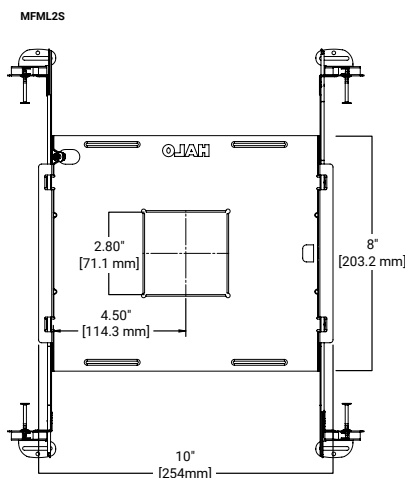
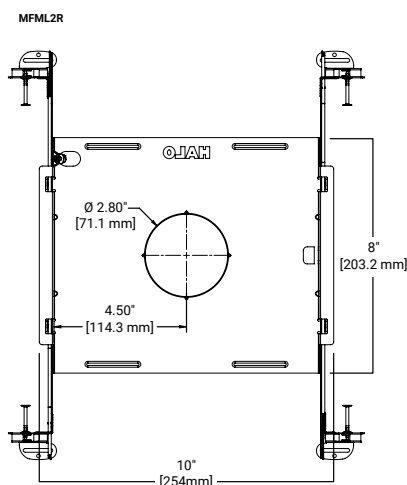


2" SQUARE DOWNLIGHT



JUNCTION BOX





Product Specifications

Construction

- Die cast aluminum trims for Downlights
- Regressed painted trims as smooth or baffle
- High impact lens provides airtite and wet location

Module

- The LED recessed downlight consists of an Chip on Board LED array, optical assembly, driver, and trim
- Achieves L70 at 50,000 hrs in IC (insulation contact) and non-IC applications

Selectable System

- Use the CCT select switch to choose between 2700K, 3000K, 3500K, 4000K, and 5000K CCT
- Use the Dim-to-Warm select switch option to choose between 3000K to 1800K or 2700K to 1800K, the light will have a warmer color temperature as the fixture dims
- Factory default is set to 3000K
- Use the 3-position Lumen Select switch to choose the brightness level (Low, Medium, High)
- Lumen Select factory default is to the highest lumen option

LED Array

- Mid-power LED array provides a uniform light source with high efficiency and no pixilation
- 90+ CRI minimum, R9 greater than 50
- Color accuracy at 3 SCDM at the endpoints and 4 SCDM in the middle provides color consistency and uniformity
- Color Temperature (CCT) is set to a factory default of 3000K

Junction Box

- Die formed metal driver/ junction box with captive hinged junction box cover
- Listed for (6) #12 AWG 90°C splice conductors, 2-in, 2-out plus (2) ground
- 2" fixtures – (3) ½" conduit pry-outs
 - Accepts 14-2, 14-3, 12-2, 12-3 U.S. and 14-2, 14-3, 12-2 Canadian NM Cable
- (2) Slide-N-Side™ non-metallic (NM) wire traps
 - Accepts 14-2, 14-3, 12-2, 12-3 U.S. and 14-2, 14-3, 12-2 Canadian NM Cable
- (3) 4-port push wire nuts with clear caps for quick and reliable mains voltage connection

Driver

- Available in 120V 60Hz or 120V-277 50/60Hz, constant current driver provides noise-free, high-efficiency operation
- **Dimmable:** Continuous, flicker-free dimming from 100% to 5% with:
 - Compatible leading or trailing edge (LE/TE) 120V phase cut dimmers; (See Dimming Guide for compatible dimmers.)
 - Optional 0-10V 120V-277V dimmers; (See Dimming Guide for compatible dimmers)
 - **Tip:** For optimal dimming performance, consider dimmers with low-end trim adjustment; Note that some dimmers require a neutral wire in the box.
- **Wiring:** Includes quick connect push connectors for mains power connections.
- Plenum rated inline electrical quick connect provides low voltage connection to fixture fitting, CMP/FT6 rated

Installation

- Can be installed in 3/8" to 1-1/2" thick ceilings
- Round or Square ceiling cutout
- Heat treated springs hold fixture fitting securely in the ceiling eliminating light leaks
- Can be removed from below the ceiling for service or replacement

Mounting Frame

- Galvanized steel mounting frame with offset aperture and integral bar hanger receivers
- Locking screws provide positive horizontal locking
- 3/8" drywall collar included to improve hole locating and drywall cutting process
- Collar is notched at 90° intervals for laser centering
- GOT NAIL! Gen 3 bar hangers adjust from 8" to 24" wide
- Pass thru feature allows shortening without removal
- Captive nail penetrates standard and engineered lumber
- Mounting flange levels platform with ceiling
- Integral clip attaches directly to tee-bar.

Airtite

- The Downlights meet Airtight ASTM-E283 requirements without gasket as long as lens is included in trim (default)

Trim Options

- Round and Square die cast trims are available in multiple colors
 - Matte White
 - Silver
 - Matte Black
- Trim cut off to reduce glare provides 55° cut off in the 2" Downlights
- Die cast trims are available in smooth and baffle
- Flush mount mud in flange is available in 2" luminaire sizes

Compliance

- UL Certified US and Canada Type IC suitable for direct contact with air permeable insulation
- Suitable for installation in plenum spaces
- Wet location listed with included lens
- Airtight per ASTM-E283 with included lens (no gasket necessary)
- Suitable for use in clothes closets when installed in accordance with the NEC 410.16 spacing requirements
- EMI/RFI emissions per FCC 47CFR Part 15 consumer limits
- Contains no mercury or lead and RoHS compliant⁽¹⁾
- Photometric testing in accordance with IES LM-79-08
- Lumen maintenance projections in accordance with IES LM-80-08 and TM-21-11
- Can be used for State of California Title 24 high efficacy LED compliance under JA8⁽¹⁾, reference Modernized Appliance Efficiency Database System (MAEDBS) for 2022 JA8 High Efficacy Lighting

Warranty

- Five year limited warranty, consult website for details. www.cooperlighting.com/warranty

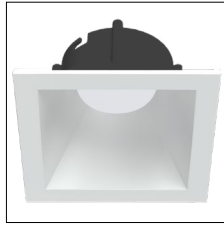
Trim Types



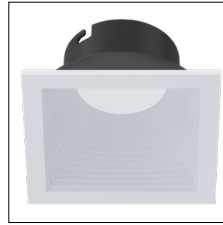
2" Round, Smooth



2" Round, Baffle



2" Square, Smooth



2" Square, Baffle

Matte
WhiteMatte
Black

Silver

Summary

	1"	2"	3"	4"
CCT	2700K/3000K/3500K/4000K/5000K			
Warming Dimming (option)	1800K-3000K or 1800K-2700K			
Lumens	100/200/400	200/400/550	400/800/1000	600/900/1200
Downlight	✓	✓	✓	✓
Wall Wash			✓	✓
Adjustable		✓	✓	✓
Optics	25°/40°/55° TIR Optics		25° asymmetric wall wash/25°/40°/55° TIR optics	
Cut Off	55°	55°	55°	50°
Input Voltage	120V or 120V-277V			
Dimming	Phase 120V or 0-10V 120V-277V			
Optical Accessories			Honeycomb Louver Clear Glass Prismatic Spread Linear spread Diffuse Sand Blasted	Soft Focus Red Dichroic Filter Blue Dichroic Filter Green Dichroic Filter
Trim Finishes	Matte Black Matte White Silver			
Trim Shapes	Round or Square			
Trim Options	Round Smooth Round Baffle Square Smooth Square Baffle			
Ceiling Applications	Flange Flushmount Mud-in Mounting Frame	Flange Flushmount Mud-in Mounting Frame	Flange Flushmount Mud-in Mounting Frame	Flange Flushmount Mud-in Mounting Frame
Standards	UL/ Title 24 JA8 ⁽¹⁾⁽²⁾			
Ratings	Wet location (when lens is installed, default) / Airtight (when lens is installed, default)			
LED Lifetime	L70 to 50,000 hrs			
Warranty	5 years			

Energy Data

ML2 Triac (High Lumen)	120V
Input Power(W)	8.36
Input Current(A)	0.071
PF	>0.9
THDi(%)	< 20
Inrush Current(A)	0.47
Inrush Duration(μs)	58
Sound(dBA)	< 22

ML2 Triac (Mid Lumen)	120V
Input Power(W)	5.87
Input Current(A)	0.05
PF	>0.9
THDi(%)	< 20
Inrush Current(A)	0.45
Inrush Duration(μs)	53
Sound(dBA)	< 22

ML2 Triac (Low Lumen)	120V
Input Power(W)	3.47
Input Current(A)	0.03
PF	>0.9
THDi(%)	< 24
Inrush Current(A)	0.44
Inrush Duration(μs)	52
Sound(dBA)	< 22

ML2 D2W (High Lumen)	120V
Input Power(W)	6.39
Input Current(A)	0.054
PF	>0.9
THDi(%)	< 20
Inrush Current(A)	0.29
Inrush Duration(μs)	119
Sound(dBA)	< 22

ML2 0-10V (High Lumen)	120V	277V
Input Power(W)	8	8.11
Input Current(A)	0.067	0.033
PF	>0.9	>0.88
THDi(%)	< 20	< 23
Inrush Current(A)	1.44	3.6
Inrush Duration(μs)	12	21
Sound(dBA)	< 22	< 22

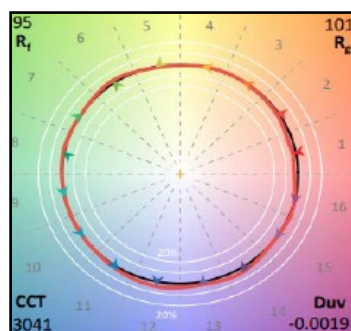
ML2 0-10V (Mid Lumen)	120V	277V
Input Power(W)	6.22	6.47
Input Current(A)	0.052	0.027
PF	>0.9	>0.85
THDi(%)	< 20	< 30
Inrush Current(A)	1.38	3.45
Inrush Duration(μs)	14	23
Sound(dBA)	< 22	< 22

ML2 0-10V (Low Lumen)	120V	277V
Input Power(W)	3	3.38
Input Current(A)	0.025	0.016
PF	>0.9	>0.75
THDi(%)	< 20	< 52
Inrush Current(A)	1.26	3.39
Inrush Duration(μs)	12	22
Sound(dBA)	< 22	< 22

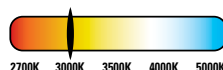
Energy & Performance Data

COLOR METRICS - TM-30-15 & CRI/CIE (3000K)

90 CRI Color Metric Summary - 3000K*



TM-30-15	Rf = 95
	Rg = 101
CRI/CIE	Ra = 96.8
	R9 = 78.3



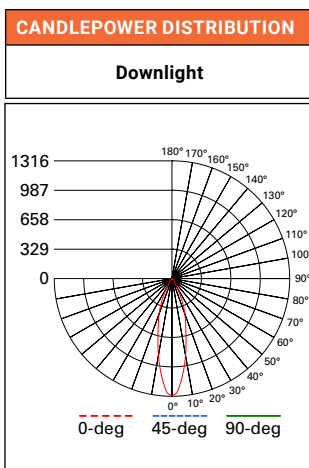
— Reference Illuminant — Test Source

Photometric Data



2" ROUND - NARROW FLOOD DISTRIBUTION - MATTE WHITE FINISH, 90 CRI, 3000K

2" ROUND	
Test Number	P886271
Fixture	ML204LS-FL9FS1E-TIR1D-25NFL-TL2RD-MW-550LM-3000K
Lumens	495 Lm
Watts	7.9 W
Efficacy	62.6 Lm/W
SC	0.46
Beam Angle	27°
UGR	10



CONE OF LIGHT

MH	FC	L	W
5.5'	43.5	2.4	2.4
7'	26.9	3	3
8'	20.6	3.6	3.6
9'	16.2	4	4
10'	13.2	4.4	4.4
12'	9.1	5.4	5.4

CANDELA TABLE

Degrees Vertical	Candela
0	1316
5	1158
15	603
25	260
35	59
45	32
55	19
65	13
75	8
85	2
90	0

ZONAL LUMEN SUMMARY

Zone	Lumens	% Fixture
0-30	389	78.7
0-40	430	86.9
0-60	470	95.1
0-90	495	100
90-180	0	0
0-180	495	100

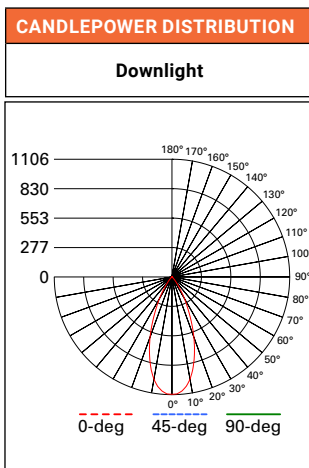
LUMINANCE

Average Candela Degrees	Average 0° Luminance
45	22328
55	15999
65	15644
75	15822
85	11888

Values are nominal for matte white reflectors, other may vary.
SC = Spacing Criteria
UGR = Unified Glare Rating

2" ROUND - FLOOD DISTRIBUTION - MATTE WHITE FINISH, 90 CRI, 3000K

2" ROUND	
Test Number	P886331
Fixture	ML204LS-FL9FS1E-TIR1D-40FL-TL2RD-MW-550LM-3000K
Lumens	619 Lm
Watts	7.9 W
Efficacy	78.3 Lm/W
SC	0.68
Beam Angle	42°
UGR	10



CONE OF LIGHT

MH	FC	L	W
5.5'	36.6	3.6	3.6
7'	22.6	4.6	4.6
8'	17.3	5.4	5.4
9'	13.7	6	6
10'	11.1	6.8	6.8
12'	7.7	8	8

CANDELA TABLE

Degrees Vertical	Candela
0	1106
5	1079
15	806
25	393
35	112
45	21
55	8
65	6
75	4
85	1
90	0

ZONAL LUMEN SUMMARY

Zone	Lumens	% Fixture
0-30	503	81.3
0-40	579	93.7
0-60	606	98
0-90	619	100
90-180	0	0
0-180	619	100

LUMINANCE

Average Candela Degrees	Average 0° Luminance
45	14443
55	7140
65	7238
75	7816
85	5661

Values are nominal for matte white reflectors, other may vary.
SC = Spacing Criteria
UGR = Unified Glare Rating

CCT Multipliers – 90CRI

2700K	3000K	3500K	4000K	5000K
0.97	1.00	1.03	1.07	1.13

Multipliers may be used to determine other relative CCT values

Color Finish Multipliers

Finish code	MW	SL	MB	MWB	SLB	MBB
Finish	Matte White	Metallic Silver	Matte Black	Matte White Baffled	Metallic Silver Baffled	Matte Black Baffled
Multiplier	1.00	0.98	0.94	1.00	0.99	0.95

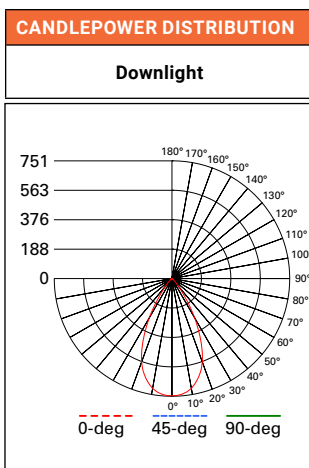
Multipliers may be used to determine relative lumen values with other cone color finishes

Photometric Data

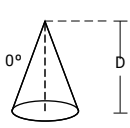
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2" ROUND - WIDE FLOOD DISTRIBUTION - MATTE WHITE FINISH, 90 CRI, 3000K

2" ROUND	
Test Number	P886391
Fixture	ML204LS-FL9FS1E-TIR1D-55WFL-TL2RD-MW-550LM-3000K
Lumens	593 Lm
Watts	7.9 W
Efficacy	75 Lm/W
SC	0.86
Beam Angle	54°
UGR	10



CONE OF LIGHT



MH	FC	L	W
5.5'	24.8	4.6	4.6
7'	15.3	6	6
8'	11.7	6.8	6.8
9'	9.3	7.6	7.6
10'	7.5	8.6	8.6
12'	5.2	10.2	10.2

CANDELA TABLE

Degrees Vertical	Candela
0	751
5	744
15	656
25	437
35	148
45	29
55	8
65	6
75	4
85	1
90	0

ZONAL LUMEN SUMMARY

Zone	Lumens	% Fixture
0-30	450	75.9
0-40	548	92.4
0-60	581	98.1
0-90	593	100
90-180	0	0
0-180	593	100

LUMINANCE

Average Candela Degrees	Average 0° Luminance
45	20165
55	7140
65	7238
75	7816
85	5661

Values are nominal for matte white reflectors, other may vary.
 SC = Spacing Criteria
 UGR = Unified Glare Rating

CCT Multipliers – 90CRI

2700K	3000K	3500K	4000K	5000K
0.97	1.00	1.03	1.07	1.13

Multipliers may be used to determine other relative CCT values

Color Finish Multipliers

Finish code	MW	SL	MB	MWB	SLB	MBB
Finish	Matte White	Metallic Silver	Matte Black	Matte White Baffled	Metallic Silver Baffled	Matte Black Baffled
Multiplier	1.00	0.98	0.94	1.00	0.99	0.95

Multipliers may be used to determine relative lumen values with other cone color finishes